

SEQUENCE LISTING

<110> Boehringer Ingelheim International GmbH

<120> Method for identifying compounds that modulate sister chromatid separation

<130> 0652.2290001

<140> To be assigned

<141> Herewith

<150> EP 01 101 252.3

<151> 2001-01-19

<150> US 60/297,440

<151> 2001-06-13

<160> 8

<170> PatentIn Ver. 2.1

<210> 1

<211> 6668

<212> DNA

<213> Homo sapiens

<220>

<221> 5'UTR

<222> (1)..(144)

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<222> (145)..(6507)

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Pro Cys Pro Asp Lys Glu Ser Asp Lys Asp	Leu Gly Pro Arg Leu Gln		
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ctc ccc tca gcc ccc gta gcc act ggt ctt tct acc ctg gac tcc atc	4875
Leu Pro Ser Ala Pro Val Ala Thr Gly Leu Ser Thr Leu Asp Ser Ile	
1565 1570 1575	
tgt gac tcc ctg agt gtt gct ttc cgg ggc att agt cac tgt cct cct	4923
Cys Asp Ser Leu Ser Val Ala Phe Arg Gly Ile Ser His Cys Pro Pro	
1580 1585 1590	
agt ggg ctc tat gcc cac ctc tgc cgc ttc ctg gcc ttg tgc ctg ggc	4971
Ser Gly Leu Tyr Ala His Leu Cys Arg Phe Leu Ala Leu Cys Leu Gly	
1595 1600 1605	
cac cgg gat cct tat gcc act gct ttc ctt gtc acc gag tct gtc tcc	5019
His Arg Asp Pro Tyr Ala Thr Ala Phe Leu Val Thr Glu Ser Val Ser	
1610 1615 1620 1625	
atc acc tgt cgc cac cag ctg ctc acc cac ctc cac aga cag ctc agc	5067
Ile Thr Cys Arg His Gln Leu Leu Thr His Leu His Arg Gln Leu Ser	
1630 1635 1640	
aag gcc cag aag cac cga gga tca ctt gaa ata gca gac cag ctg cag	5115
Lys Ala Gln Lys His Arg Gly Ser Leu Glu Ile Ala Asp Gln Leu Gln	
1645 1650 1655	
ggg ctg agc ctt cag gag atg cct gga gat gtc ccc ctg gcc cgc atc	5163
Gly Leu Ser Leu Gln Glu Met Pro Gly Asp Val Pro Leu Ala Arg Ile	
1660 1665 1670	
cag cgc ctc ttt tcc ttc agg gct ttg gaa tct ggc cac ttc ccc cag	5211
Gln Arg Leu Phe Ser Phe Arg Ala Leu Glu Ser Gly His Phe Pro Gln	
1675 1680 1685	
cct gaa aag gag agt ttc cag gag cgc ctg gct ctg atc ccc agt ggg	5259
Pro Glu Lys Glu Ser Phe Gln Glu Arg Leu Ala Leu Ile Pro Ser Gly	
1690 1695 1700 1705	
gtg act gtg tgt gtg ttg gcc ctg gcc acc ctc cag ccc gga acc gtg	5307
Val Thr Val Cys Val Leu Ala Leu Ala Thr Leu Gln Pro Gly Thr Val	
1710 1715 1720	
ggc aac acc ctc ctg ctg acc cgg ctg gaa aag gac agt ccc cca gtc	5355
Gly Asn Thr Leu Leu Leu Thr Arg Leu Glu Lys Asp Ser Pro Pro Val	
1725 1730 1735	
agt gtg cag att ccc act ggc cag aac aag ctt cat ctg cgt tca gtc	5403
Ser Val Gln Ile Pro Thr Gly Gln Asn Lys Leu His Leu Arg Ser Val	
1740 1745 1750	
ctg aat gag ttt gat gcc atc cag aag gca cag aaa gag aac agc agc	5451
Leu Asn Glu Phe Asp Ala Ile Gln Lys Ala Gln Lys Glu Asn Ser Ser	
1755 1760 1765	
tgt act gac aag cga gaa tgg tgg aca ggg cgg ctg gca ctg gac cac	5499
Cys Thr Asp Lys Arg Glu Trp Trp Thr Gly Arg Leu Ala Leu Asp His	
1770 1775 1780 1785	
agg atg gag gtt ctc atc gct tcc cta gag aag tct gtg ctg ggc tgc	5547
Arg Met Glu Val Leu Ile Ala Ser Leu Glu Lys Ser Val Leu Gly Cys	
1790 1795 1800	
tgg aag ggg ctg ctg ctg ccg tcc agt gag gag ccc ggc cct gcc cag	5595
Trp Lys Gly Leu Leu Leu Pro Ser Ser Glu Glu Pro Gly Pro Ala Gln	

1805	1810	1815	
gag gcc tcc cgc cta cag gag ctg cta cag gac tgt ggc tgg aaa tat			5643
Glu Ala Ser Arg Leu Gln Glu Leu Leu Gln Asp Cys Gly Trp Lys Tyr			
1820	1825	1830	
cct gac cgc act ctg ctg aaa atc atg ctc agt ggt gcc ggt gcc ctc			5691
Pro Asp Arg Thr Leu Leu Lys Ile Met Leu Ser Gly Ala Gly Ala Leu			
1835	1840	1845	
acc cct cag gac att cag gcc ctg gcc tac ggg ctg tgc cca acc cag			5739
Thr Pro Gln Asp Ile Gln Ala Leu Ala Tyr Gly Leu Cys Pro Thr Gln			
1850	1855	1860	1865
cca gag cga gcc cag gag ctc ctg aat gag gca gta gga cgt cta cag			5787
Pro Glu Arg Ala Gln Glu Leu Leu Asn Glu Ala Val Gly Arg Leu Gln			
1870	1875	1880	
ggc ctg aca gta cca agc aat agc cac ctt gtc ttg gtc cta gac aag			5835
Gly Leu Thr Val Pro Ser Asn Ser His Leu Val Leu Val Leu Asp Lys			
1885	1890	1895	
gac ttg cag aag ctg ccg tgg gaa agc atg ccc agc ctc caa gca ctg			5883
Asp Leu Gln Lys Leu Pro Trp Glu Ser Met Pro Ser Leu Gln Ala Leu			
1900	1905	1910	
cct gtc acc cgg ctg ccc tcc ttc cgc ttc cta ctc agc tac tcc atc			5931
Pro Val Thr Arg Leu Pro Ser Phe Arg Phe Leu Leu Ser Tyr Ser Ile			
1915	1920	1925	
atc aaa gag tat ggg gcc tcg cca gtg ctg agt caa ggg gtg gat cca			5979
Ile Lys Glu Tyr Gly Ala Ser Pro Val Leu Ser Gln Gly Val Asp Pro			
1930	1935	1940	1945
cga agt acc ttc tat gtc ctg aac cct cac aat aac ctg tca agc aca			6027
Arg Ser Thr Phe Tyr Val Leu Asn Pro His Asn Asn Leu Ser Ser Thr			
1950	1955	1960	
gag gag caa ttt cga gcc aat ttc agc agt gaa gct ggc tgg aga gga			6075
Glu Glu Gln Phe Arg Ala Asn Phe Ser Ser Glu Ala Gly Trp Arg Gly			
1965	1970	1975	
gtg gtt ggg gag gtg cca aga cct gaa cag gtg cag gaa gcc ctg aca			6123
Val Val Gly Glu Val Pro Arg Pro Glu Gln Val Gln Glu Ala Leu Thr			
1980	1985	1990	
aag cat gat ttg tat atc tat gca ggg cat ggg gct ggt gcc cgc ttc			6171
Lys His Asp Leu Tyr Ile Tyr Ala Gly His Gly Ala Gly Ala Arg Phe			
1995	2000	2005	
ctt gat ggg cag gct gtc ctg cgg ctg agc tgt cgg gca gtg gcc ctg			6219
Leu Asp Gly Gln Ala Val Leu Arg Leu Ser Cys Arg Ala Val Ala Leu			
2010	2015	2020	2025
ctg ttt ggc tgt agc agt gcg gcc ctg gct gtg cat gga aac ctg gag			6267
Leu Phe Gly Cys Ser Ser Ala Ala Leu Ala Val His Gly Asn Leu Glu			
2030	2035	2040	
ggg gct ggc atc gtg ctc aag tac atc atg gct ggt tgc ccc ttg ttt			6315
Gly Ala Gly Ile Val Leu Lys Tyr Ile Met Ala Gly Cys Pro Leu Phe			
2045	2050	2055	

Arg Arg Ala Ala Phe Ala Ala Arg Leu Lys Ala Leu Ser Phe Leu Val
165 170 175

Leu Leu Glu Asp Glu Ser Thr Pro Cys Glu Val Pro His Phe Ala Ser
 180 185 190
 Pro Thr Ala Cys Arg Ala Val Ala Ala His Gln Leu Phe Asp Ala Ser
 195 200 205
 Gly His Gly Leu Asn Glu Ala Asp Ala Asp Phe Leu Asp Asp Leu Leu
 210 215 220
 Ser Arg His Val Ile Arg Ala Leu Val Gly Glu Arg Gly Ser Ser Ser
 225 230 235 240
 Gly Leu Leu Ser Pro Gln Arg Ala Leu Cys Leu Leu Glu Leu Thr Leu
 245 250 255
 Glu His Cys Arg Arg Phe Cys Trp Ser Arg His His Asp Lys Ala Ile
 260 265 270
 Ser Ala Val Glu Lys Ala His Ser Tyr Leu Arg Asn Thr Asn Leu Ala
 275 280 285
 Pro Ser Leu Gln Leu Cys Gln Leu Gly Val Lys Leu Leu Gln Val Gly
 290 295 300
 Glu Glu Gly Pro Gln Ala Val Ala Lys Leu Leu Ile Lys Ala Ser Ala
 305 310 315 320
 Val Leu Ser Lys Ser Met Glu Ala Pro Ser Pro Pro Leu Arg Ala Leu
 325 330 335
 Tyr Glu Ser Cys Gln Phe Phe Leu Ser Gly Leu Glu Arg Gly Thr Lys
 340 345 350
 Arg Arg Tyr Arg Leu Asp Ala Ile Leu Ser Leu Phe Ala Phe Leu Gly
 355 360 365
 Gly Tyr Cys Ser Leu Leu Gln Gln Leu Arg Asp Asp Gly Val Tyr Gly
 370 375 380
 Gly Ser Ser Lys Gln Gln Gln Ser Phe Leu Gln Met Tyr Phe Gln Gly
 385 390 395 400
 Leu His Leu Tyr Thr Val Val Val Tyr Asp Phe Ala Gln Gly Cys Gln
 405 410 415
 Ile Val Asp Leu Ala Asp Leu Thr Gln Leu Val Asp Ser Cys Lys Ser
 420 425 430
 Thr Val Val Trp Met Leu Glu Ala Leu Glu Gly Leu Ser Gly Gln Glu
 435 440 445
 Leu Thr Asp His Met Gly Met Thr Ala Ser Tyr Thr Ser Asn Leu Ala
 450 455 460
 Tyr Ser Phe Tyr Ser His Lys Leu Tyr Ala Glu Ala Cys Ala Ile Ser
 465 470 475 480
 Glu Pro Leu Cys Gln His Leu Gly Leu Val Lys Pro Gly Thr Tyr Pro
 485 490 495
 Glu Val Pro Pro Glu Lys Leu His Arg Cys Phe Arg Leu Gln Val Glu
 500 505 510

Ser Leu Lys Lys Leu Gly Lys Gln Ala Gln Gly Cys Lys Met Val Ile
 515 520 525
 Leu Trp Leu Ala Ala Leu Gln Pro Cys Ser Pro Glu His Met Ala Glu
 530 535 540
 Pro Val Thr Phe Trp Val Arg Val Lys Met Asp Ala Ala Arg Ala Gly
 545 550 555 560
 Asp Lys Glu Leu Gln Leu Lys Thr Leu Arg Asp Ser Leu Ser Gly Trp
 565 570 575
 Asp Pro Glu Thr Leu Ala Leu Leu Leu Arg Glu Glu Leu Gln Ala Tyr
 580 585 590
 Lys Ala Val Arg Ala Asp Thr Gly Gln Glu Arg Phe Asn Ile Ile Cys
 595 600 605
 Asp Leu Leu Glu Leu Ser Pro Glu Glu Thr Pro Ala Gly Ala Trp Ala
 610 615 620
 Arg Ala Thr His Leu Val Glu Leu Ala Gln Val Leu Cys Tyr His Asp
 625 630 635 640
 Phe Thr Gln Gln Thr Asn Cys Ser Ala Leu Asp Ala Ile Arg Glu Ala
 645 650 655
 Leu Gln Leu Leu Asp Ser Val Arg Pro Glu Ala Gln Ala Arg Asp Gln
 660 665 670
 Leu Leu Asp Asp Lys Ala Gln Ala Leu Leu Trp Leu Tyr Ile Cys Thr
 675 680 685
 Leu Glu Ala Lys Ile Gln Glu Gly Ile Glu Arg Asp Arg Arg Ala Gln
 690 695 700
 Ala Pro Gly Asn Leu Glu Glu Phe Glu Val Asn Asp Leu Asn Tyr Glu
 705 710 715 720
 Asp Lys Leu Gln Glu Asp Arg Phe Leu Tyr Ser Asn Ile Ala Phe Asn
 725 730 735
 Leu Ala Ala Asp Ala Ala Gln Ser Lys Cys Leu Asp Gln Ala Leu Ala
 740 745 750
 Leu Trp Lys Glu Leu Leu Thr Lys Gly Gln Ala Pro Ala Val Arg Cys
 755 760 765
 Leu Gln Gln Thr Ala Ala Ser Leu Gln Ile Leu Ala Ala Leu Tyr Gln
 770 775 780
 Leu Val Ala Lys Pro Met Gln Ala Leu Glu Val Leu Leu Leu Leu Arg
 785 790 795 800
 Ile Val Ser Glu Arg Leu Lys Asp His Ser Lys Ala Ala Gly Ser Ser
 805 810 815
 Cys His Ile Thr Gln Leu Leu Leu Thr Leu Gly Cys Pro Ser Tyr Ala
 820 825 830
 Gln Leu His Leu Glu Glu Ala Ala Ser Ser Leu Lys His Leu Asp Gln

835					840					845						
Thr	Thr	Asp	Thr	Tyr	Leu	Leu	Leu	Ser	Leu	Thr	Cys	Asp	Leu	Leu	Arg	
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Ser	Gln	Leu	Tyr	Trp	Thr	His	Gln	Lys	Val	Thr	Lys	Gly	Val	Ser	Leu	
865					870					875					880	
Leu	Leu	Ser	Val	Leu	Arg	Asp	Pro	Ala	Leu	Gln	Lys	Ser	Ser	Lys	Ala	
885					890					895						
Trp	Tyr	Leu	Leu	Arg	Val	Gln	Val	Leu	Gln	Leu	Val	Ala	Ala	Tyr	Leu	
900					905					910						
Ser	Leu	Pro	Ser	Asn	Asn	Leu	Ser	His	Ser	Leu	Trp	Glu	Gln	Leu	Cys	
915					920					925						
Ala	Gln	Gly	Trp	Gln	Thr	Pro	Glu	Ile	Ala	Leu	Ile	Asp	Ser	His	Lys	
930					935					940						
Leu	Leu	Arg	Ser	Ile	Ile	Leu	Leu	Leu	Met	Gly	Ser	Asp	Ile	Leu	Ser	
945					950					955					960	
Thr	Gln	Lys	Ala	Ala	Val	Glu	Thr	Ser	Phe	Leu	Asp	Tyr	Gly	Glu	Asn	
965					970					975						
Leu	Val	Gln	Lys	Trp	Gln	Val	Leu	Ser	Glu	Val	Leu	Ser	Cys	Ser	Glu	
980					985					990						
Lys	Leu	Val	Cys	His	Leu	Gly	Arg	Leu	Gly	Ser	Val	Ser	Glu	Ala	Lys	
995					1000					1005						
Ala	Phe	Cys	Leu	Glu	Ala	Leu	Lys	Leu	Thr	Thr	Lys	Leu	Gln	Ile	Pro	
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Arg	Gln	Cys	Ala	Leu	Phe	Leu	Val	Leu	Lys	Gly	Glu	Leu	Glu	Leu	Ala	
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Arg	Asn	Asp	Ile	Asp	Leu	Cys	Gln	Ser	Asp	Leu	Gln	Gln	Val	Leu	Phe	
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Leu	Leu	Glu	Ser	Cys	Thr	Glu	Phe	Gly	Gly	Val	Thr	Gln	His	Leu	Asp	
1060					1065					1070						
Ser	Val	Lys	Lys	Val	His	Leu	Gln	Lys	Gly	Lys	Gln	Gln	Ala	Gln	Val	
1075					1080					1085						
Pro	Cys	Pro	Pro	Gln	Leu	Pro	Glu	Glu	Glu	Leu	Phe	Leu	Arg	Gly	Pro	
1090					1095					1100						
Ala	Leu	Glu	Leu	Val	Ala	Thr	Val	Ala	Lys	Glu	Pro	Gly	Pro	Ile	Ala	
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Pro	Ser	Thr	Asn	Ser	Ser	Pro	Val	Leu	Lys	Thr	Lys	Pro	Gln	Pro	Ile	
1125					1130					1135						
Pro	Asn	Phe	Leu	Ser	His	Ser	Pro	Thr	Cys	Asp	Cys	Ser	Leu	Cys	Ala	
1140					1145					1150						
Ser	Pro	Val	Leu	Thr	Ala	Val	Cys	Leu	Arg	Trp	Val	Leu	Val	Thr	Ala	
1155					1160					1165						

Gly Val Arg Leu Ala Met Gly His Gln Ala Gln Gly Leu Asp Leu Leu
 1170 1175 1180
 Gln Val Val Leu Lys Gly Cys Pro Glu Ala Ala Glu Arg Leu Thr Gln
 1185 1190 1195 1200
 Ala Leu Gln Ala Ser Leu Asn His Lys Thr Pro Pro Ser Leu Val Pro
 1205 1210 1215
 Ser Leu Leu Asp Glu Ile Leu Ala Gln Ala Tyr Thr Leu Leu Ala Leu
 1220 1225 1230
 Glu Gly Leu Asn Gln Pro Ser Asn Glu Ser Leu Gln Lys Val Leu Gln
 1235 1240 1245
 Ser Gly Leu Lys Phe Val Ala Ala Arg Ile Pro His Leu Glu Pro Trp
 1250 1255 1260
 Arg Ala Ser Leu Leu Leu Ile Trp Ala Leu Thr Lys Leu Gly Gly Leu
 1265 1270 1275 1280
 Ser Cys Cys Thr Thr Gln Leu Phe Ala Ser Ser Trp Gly Trp Gln Pro
 1285 1290 1295
 Pro Leu Ile Lys Ser Val Pro Gly Ser Glu Pro Ser Lys Thr Gln Gly
 1300 1305 1310
 Gln Lys Arg Ser Gly Arg Gly Arg Gln Lys Leu Ala Ser Ala Pro Leu
 1315 1320 1325
 Ser Leu Asn Asn Thr Ser Gln Lys Gly Leu Glu Gly Arg Gly Leu Pro
 1330 1335 1340
 Cys Thr Pro Lys Pro Pro Asp Arg Ile Arg Gln Ala Gly Pro His Val
 1345 1350 1355 1360
 Pro Phe Thr Val Phe Glu Glu Val Cys Pro Thr Glu Ser Lys Pro Glu
 1365 1370 1375
 Val Pro Gln Ala Pro Arg Val Gln Gln Arg Val Gln Thr Arg Leu Lys
 1380 1385 1390
 Val Asn Phe Ser Asp Asp Ser Asp Leu Glu Asp Pro Val Ser Ala Glu
 1395 1400 1405
 Ala Trp Leu Ala Glu Glu Pro Lys Arg Arg Gly Thr Ala Ser Arg Gly
 1410 1415 1420
 Arg Gly Arg Ala Arg Lys Gly Leu Ser Leu Lys Thr Asp Ala Val Val
 1425 1430 1435 1440
 Ala Pro Gly Ser Ala Pro Gly Asn Pro Gly Leu Asn Gly Arg Ser Arg
 1445 1450 1455
 Arg Ala Lys Lys Val Ala Ser Arg His Cys Glu Glu Arg Arg Pro Gln
 1460 1465 1470
 Arg Ala Ser Asp Gln Ala Arg Pro Gly Pro Glu Ile Met Arg Thr Ile
 1475 1480 1485
 Pro Glu Glu Glu Leu Thr Asp Asn Trp Arg Lys Met Ser Phe Glu Ile
 1490 1495 1500

Leu Arg Gly Ser Asp Gly Glu Asp Ser Ala Ser Gly Gly Lys Thr Pro
 1505 1510 1515 1520
 Ala Pro Gly Pro Glu Ala Ala Ser Gly Glu Trp Glu Leu Leu Arg Leu
 1525 1530 1535
 Asp Ser Ser Lys Lys Lys Leu Pro Ser Pro Cys Pro Asp Lys Glu Ser
 1540 1545 1550
 Asp Lys Asp Leu Gly Pro Arg Leu Gln Leu Pro Ser Ala Pro Val Ala
 1555 1560 1565
 Thr Gly Leu Ser Thr Leu Asp Ser Ile Cys Asp Ser Leu Ser Val Ala
 1570 1575 1580
 Phe Arg Gly Ile Ser His Cys Pro Pro Ser Gly Leu Tyr Ala His Leu
 1585 1590 1595 1600
 Cys Arg Phe Leu Ala Leu Cys Leu Gly His Arg Asp Pro Tyr Ala Thr
 1605 1610 1615
 Ala Phe Leu Val Thr Glu Ser Val Ser Ile Thr Cys Arg His Gln Leu
 1620 1625 1630
 Leu Thr His Leu His Arg Gln Leu Ser Lys Ala Gln Lys His Arg Gly
 1635 1640 1645
 Ser Leu Glu Ile Ala Asp Gln Leu Gln Gly Leu Ser Leu Gln Glu Met
 1650 1655 1660
 Pro Gly Asp Val Pro Leu Ala Arg Ile Gln Arg Leu Phe Ser Phe Arg
 1665 1670 1675 1680
 Ala Leu Glu Ser Gly His Phe Pro Gln Pro Glu Lys Glu Ser Phe Gln
 1685 1690 1695
 Glu Arg Leu Ala Leu Ile Pro Ser Gly Val Thr Val Cys Val Leu Ala
 1700 1705 1710
 Leu Ala Thr Leu Gln Pro Gly Thr Val Gly Asn Thr Leu Leu Leu Thr
 1715 1720 1725
 Arg Leu Glu Lys Asp Ser Pro Pro Val Ser Val Gln Ile Pro Thr Gly
 1730 1735 1740
 Gln Asn Lys Leu His Leu Arg Ser Val Leu Asn Glu Phe Asp Ala Ile
 1745 1750 1755 1760
 Gln Lys Ala Gln Lys Glu Asn Ser Ser Cys Thr Asp Lys Arg Glu Trp
 1765 1770 1775
 Trp Thr Gly Arg Leu Ala Leu Asp His Arg Met Glu Val Leu Ile Ala
 1780 1785 1790
 Ser Leu Glu Lys Ser Val Leu Gly Cys Trp Lys Gly Leu Leu Leu Pro
 1795 1800 1805
 Ser Ser Glu Glu Pro Gly Pro Ala Gln Glu Ala Ser Arg Leu Gln Glu
 1810 1815 1820
 Leu Leu Gln Asp Cys Gly Trp Lys Tyr Pro Asp Arg Thr Leu Leu Lys
 1825 1830 1835 1840

Ile Met Leu Ser Gly Ala Gly Ala Leu Thr Pro Gln Asp Ile Gln Ala
 1845 1850 1855
 Leu Ala Tyr Gly Leu Cys Pro Thr Gln Pro Glu Arg Ala Gln Glu Leu
 1860 1865 1870
 Leu Asn Glu Ala Val Gly Arg Leu Gln Gly Leu Thr Val Pro Ser Asn
 1875 1880 1885
 Ser His Leu Val Leu Val Leu Asp Lys Asp Leu Gln Lys Leu Pro Trp
 1890 1895 1900
 Glu Ser Met Pro Ser Leu Gln Ala Leu Pro Val Thr Arg Leu Pro Ser
 1905 1910 1915 1920
 Phe Arg Phe Leu Leu Ser Tyr Ser Ile Ile Lys Glu Tyr Gly Ala Ser
 1925 1930 1935
 Pro Val Leu Ser Gln Gly Val Asp Pro Arg Ser Thr Phe Tyr Val Leu
 1940 1945 1950
 Asn Pro His Asn Asn Leu Ser Ser Thr Glu Glu Gln Phe Arg Ala Asn
 1955 1960 1965
 Phe Ser Ser Glu Ala Gly Trp Arg Gly Val Val Gly Glu Val Pro Arg
 1970 1975 1980
 Pro Glu Gln Val Gln Glu Ala Leu Thr Lys His Asp Leu Tyr Ile Tyr
 1985 1990 1995 2000
 Ala Gly His Gly Ala Gly Ala Arg Phe Leu Asp Gly Gln Ala Val Leu
 2005 2010 2015
 Arg Leu Ser Cys Arg Ala Val Ala Leu Leu Phe Gly Cys Ser Ser Ala
 2020 2025 2030
 Ala Leu Ala Val His Gly Asn Leu Glu Gly Ala Gly Ile Val Leu Lys
 2035 2040 2045
 Tyr Ile Met Ala Gly Cys Pro Leu Phe Leu Gly Asn Leu Trp Asp Val
 2050 2055 2060
 Thr Asp Arg Asp Ile Asp Arg Tyr Thr Glu Ala Leu Leu Gln Gly Trp
 2065 2070 2075 2080
 Leu Gly Ala Gly Pro Gly Ala Pro Leu Leu Tyr Tyr Val Asn Gln Ala
 2085 2090 2095

$\langle 220 \rangle$

<223> Description of Artificial Sequence:primer

<400> 7

gaattctaatac gactcact ataggatcca tggattccag caagaagaag ctgccc 56

<210> 8

<211> 27

<212> DNA

<213> Artificial Sequence

 $\langle 220 \rangle$

<223> Description of Artificial Sequence:primer

<400> 8

ttattaccgc agagagacag gcaagcc 27

Parameter	1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	2030-2031	2031-2032	2032-2033	2033-2034	2034-2035	2035-2036	2036-2037	2037-2038	2038-2039	2039-2040	2040-2041	2041-2042	2042-2043	2043-2044	2044-2045	2045-2046	2046-2047	2047-2048	2048-2049	2049-2050	2050-2051	2051-2052	2052-2053	2053-2054	2054-2055	2055-2056	2056-2057	2057-2058	2058-2059	2059-2060	2060-2061	2061-2062	2062-2063	2063-2064	2064-2065	2065-2066	2066-2067	2067-2068	2068-2069	2069-2070	2070-2071	2071-2072	2072-2073	2073-2074	2074-2075	2075-2076	2076-2077	2077-2078	2078-2079	2079-2080	2080-2081	2081-2082	2082-2083	2083-2084	2084-2085	2085-2086	2086-2087	2087-2088	2088-2089	2089-2090	2090-2091	2091-2092	2092-2093	2093-2094	2094-2095	2095-2096	2096-2097	2097-2098	2098-2099	2099-2100	2100-2101	2101-2102	2102-2103	2103-2104	2104-2105	2105-2106	2106-2107	2107-2108	2108-2109	2109-2110	2110-2111	2111-2112	2112-2113	2113-2114	2114-2115	2115-2116	2116-2117	2117-2118	2118-2119	2119-2120	2120-2121	2121-2122	2122-2123	2123-2124	2124-2125	2125-2126	2126-2127	2127-2128	2128-2129	2129-2130	2130-2131	2131-2132	2132-2133	2133-2134	2134-2135	2135-2136	2136-2137	2137-2138	2138-2139	2139-2140	2140-2141	2141-2142	2142-2143	2143-2144	2144-2145	2145-2146	2146-2147	2147-2148	2148-2149	2149-2150	2150-2151	2151-2152	2152-2153	2153-2154	2154-2155	2155-2156	2156-2157	2157-2158	2158-2159	2159-2160	2160-2161	2161-2162	2162-2163	2163-2164	2164-2165	2165-2166	2166-2167	2167-2168	2168-2169	2169-2170	2170-2171	2171-2172	2172-2173	2173-2174	2174-2175	2175-2176	2176-2177	2177-2178	2178-2179	2179-2180	2180-2181	2181-2182	2182-2183	2183-2184	2184-2185	2185-2186	2186-2187	2187-2188	2188-2189	2189-2190	2190-2191	2191-2192	2192-2193	2193-2194	2194-2195	2195-2196	2196-2197	2197-2198	2198-2199	2199-2200	2200-2201	2201-2202	2202-2203	2203-2204	2204-2205	2205-2206	2206-2207	2207-2208	2208-2209	2209-2210	2210-2211	2211-2212	2212-2213	2213-2214	2214-2215	2215-2216	2216-2217	2217-2218	2218-2219	2219-2220	2220-2221	2221-2222	2222-2223	2223-2224	2224-2225	2225-2226	2226-2227	2227-2228	2228-2229	2229-2230	2230-2231	2231-2232	2232-2233	2233-2234	2234-2235	2235-2236	2236-2237	2237-2238	2238-2239	2239-2240	2240-2241	2241-2242	2242-2243	2243-2244	2244-2245	2245-2246	2246-2247	2247-2248	2248-2249	2249-2250	2250-2251	2251-2252	2252-2253	2253-2254	2254-2255	2255-2256	2256-2257	2257-2258	2258-2259	2259-2260	2260-2261	2261-2262</
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